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Canada's Global Mining Presence

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THE GLOBAL MARKET FOR EXPLORATION

During 1996, the worldwide mineral exploration market for precious metals, base metals and diamonds grew by 30% to $6.3 billion (US$4.6 billion), up from $4.9 billion (US$3.5 billion) in 1995.[1]

Larger-Company Market

Much of what is known about global trends in mineral exploration for precious metals, base metals and diamonds is based on data with respect to the activities of the larger companies worldwide. These companies, defined here as those with annual exploration budgets greater than $4 million (US$3 million), control about three quarters of the global market for exploration. In 1996, there were 223 of these larger companies and, as a group, they were expected to spend $4.8 billion (US$3.5 billion) on exploration worldwide during that year (Figure 1).

CANADIAN EXPLORATION ACTIVITY ABROAD

At the end of 1996, companies of all sizes listed on Canadian stock exchanges held interests in a portfolio of more than 8300 exploration or producing properties located in Canada or elsewhere around the world (Figure 2).[2]

In 1996, the larger Canadian-based companies were expected to spend some $1.3 billion on mineral exploration in both Canada and elsewhere throughout the world (Figure 3). The budgets of these Canadian companies represent 28% of exploration programs planned by all of the world's larger mining companies, up from 25% in 1995. Canadian companies currently hold the dominant share of the mineral exploration market worldwide.

Canadian companies have had considerable success in securing the financing required to undertake sizeable exploration programs in both Canada and abroad. As a result, the number of Canadian-based companies that planned to spend more than $4 million on exploration around the world grew by 70% to 94 in 1996, up from only 55 in 1995. Many of these larger companies are junior companies, that is, they rely on the stock market rather than on retained earnings or debt to provide the capital required to conduct their exploration programs.

In 1996, the larger Canadian-based companies planned to spend $958 million outside of Canada. Over the past five years, the aggregate annual budgets (adjusted for inflation) of the larger Canadian-based companies for exploration abroad have increased at an average annual compound rate of 45%, up from $214 million in 1992.

The proportion of the aggregate budgets of the larger Canadian-based companies allocated to exploration outside Canada rose to over 70% in 1996. In 1992, 1993, 1994 and 1995, the proportions were 43%, 49%, 58% and 68% respectively.

At the end of 1996, companies of all sizes listed on Canadian stock exchanges held interests in some 3400 foreign mineral properties. Since the early 1990s, the average annual compound rate of growth in the acquisition of foreign mineral properties by these companies has been over 20%. During 1996, the portfolio of mineral properties held by Canadian companies abroad grew by 650.

Companies of all sizes listed on Canadian stock exchanges are active in more than 100 foreign countries around the world. However, apart from the United States, where Canadian companies have a substantial mining presence (Figure 2), two dozen other nations, spread across the globe, account for 80% of the balance of the mineral property portfolio held by Canadian companies abroad (Figure 4).

Most of the properties in which companies of all sizes listed on Canadian stock exchanges have interests are at the exploration stage. The ratio of foreign exploration properties to the total number of foreign

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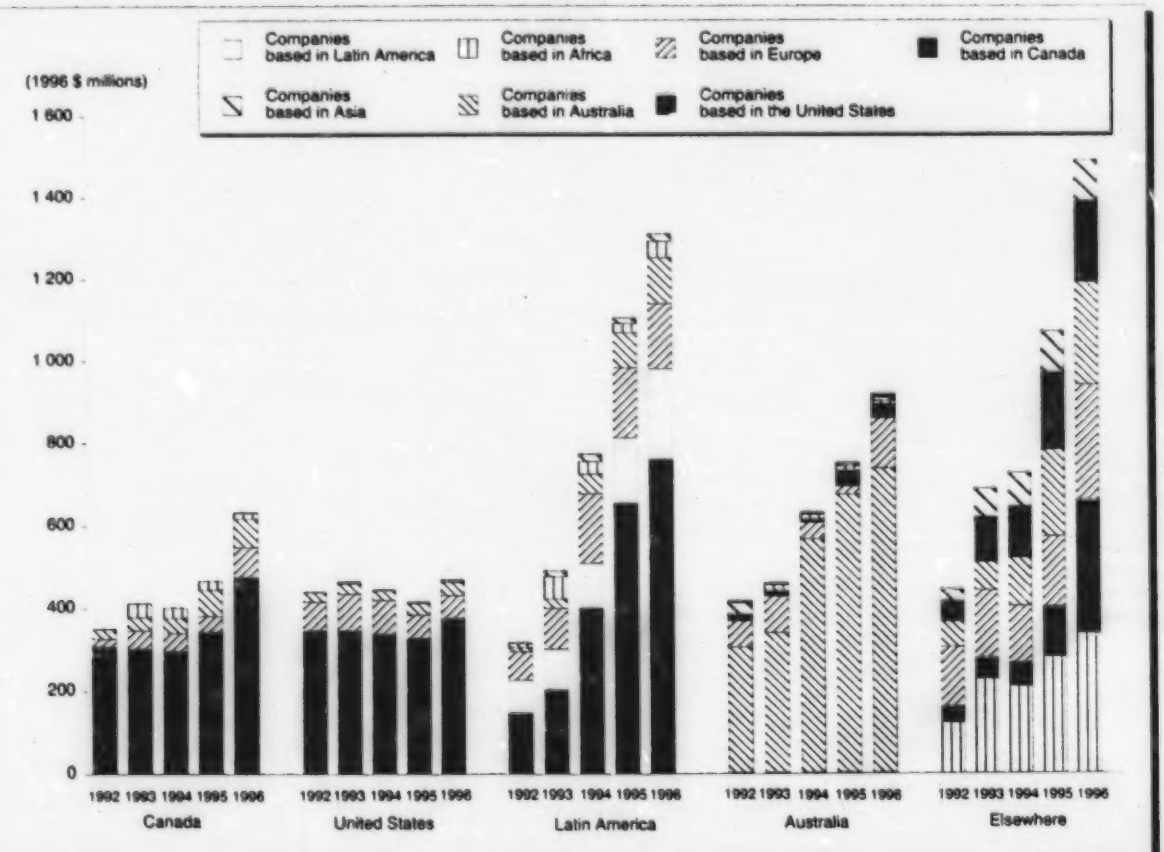
exploration and producing properties held by such companies has increased steadily since the early 1990s. In late 1992, that ratio was 0.82 for Latin America and 0.74 for the rest of the world but, by late 1996, it had increased to 0.92 and 0.87 respectively. In comparison, the ratio of exploration properties to the total number of properties held in Canada has remained roughly constant at 0.95 over the past five years. Because exploration is more risky than production, it would appear that Canadian companies have assumed, over a relatively short period of time, increasing amounts of geological and country risk abroad.

A sample of some 300 foreign mineral property transactions in which junior companies based in Canada were involved over the two-year period July 1994 through June 1996[3] suggests that the current country strategy (Figure 5) of this group of companies does not differ appreciably from that of senior companies.

Activity in the United States

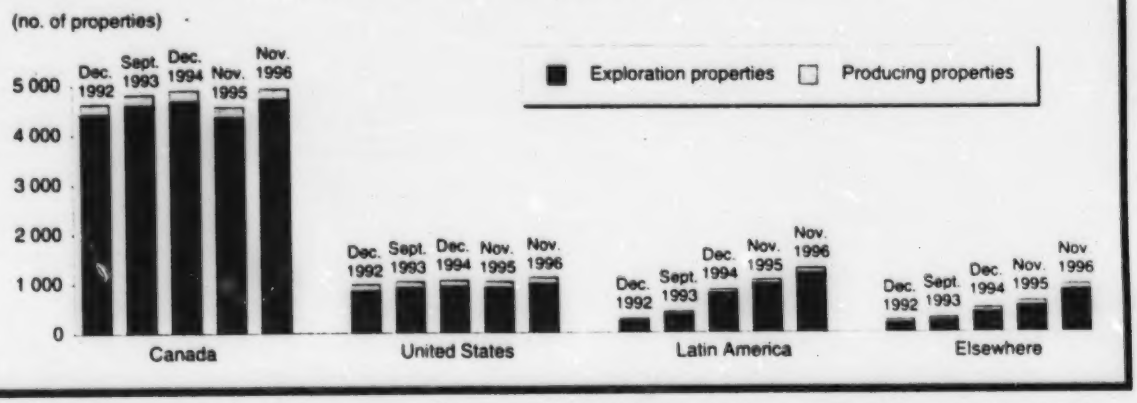
In 1996, the larger-company exploration market in the United States was valued at some $470 million, or 10% of the $4.8 billion larger-company market worldwide (Figure 1). During that year, the larger Canadian-based companies planned to increase their exploration expenditures to $144 million in that country (Figure 3). Adjusted for inflation, annual exploration budgets of the larger Canadian-based companies for the United States have grown at an

Figure 1
Aggregate Exploration Budgets of the World's Larger Companies, by Region, 1992-96
Companies with Worldwide Budgets of at Least $4 million (US$3 million)
For Precious-Metal, Base-Metal or Diamond Exploration



Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia.
Notes: Worldwide exploration budgets of companies that intended to spend less than $4 million (US$3 million) annually, of which there are several hundred based in Canada or Australia, are excluded. Worldwide exploration budgets for other commodities such as uranium or industrial minerals are also excluded.

Figure 2
Canadian Mineral Property Portfolio Worldwide, by Region, 1992-96
Companies of All Sizes Listed on Canadian Stock Exchanges

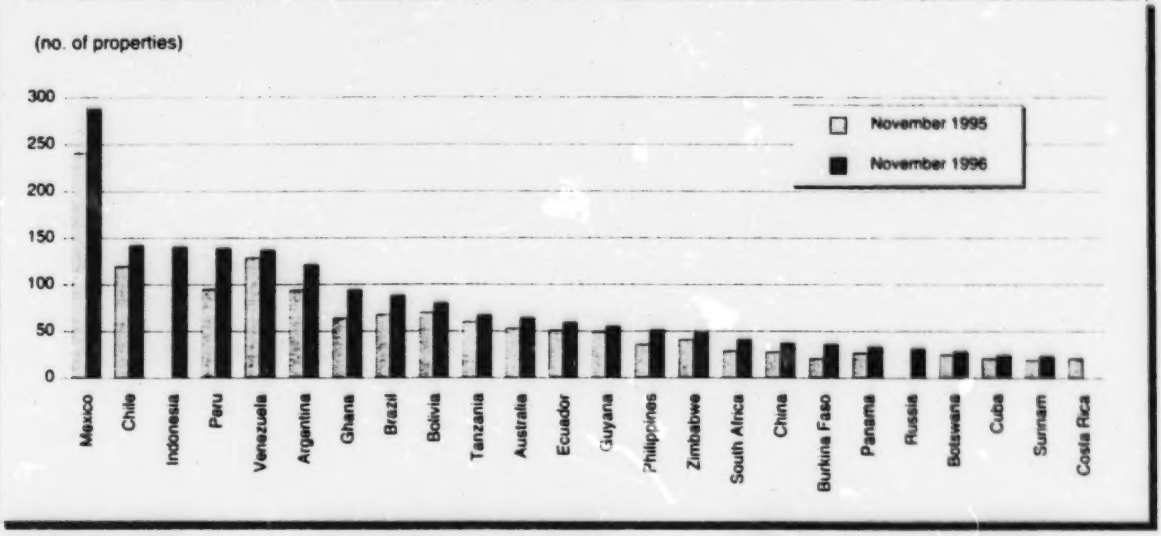


Source: Natural Resources Canada, based on *MIN-MET CANADA* database, ROBERTSON INFO-DATA Inc., Vancouver, British Columbia, and used under licence.

Figure 3
Aggregate Exploration Budgets of the World's Larger Companies for Canada, and of the Larger Canadian-Based Companies Abroad, 1992-96
Companies with Worldwide Budgets of at Least $4 million (US$3 million) for Precious-Metal, Base-Metal or Diamond Exploration

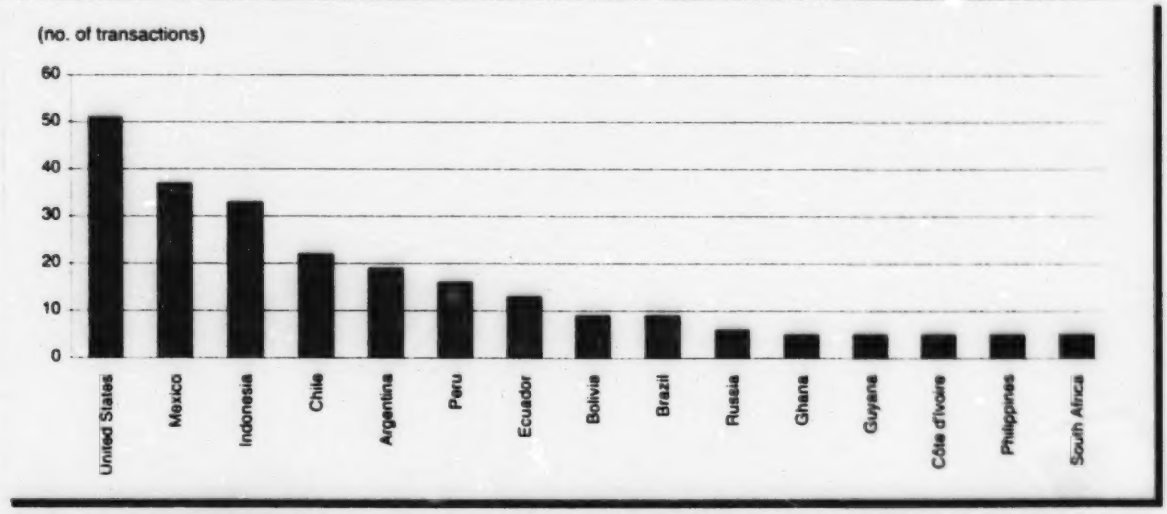
Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia
Notes: Worldwide exploration budgets of companies that intended to spend less than $4 million (US$3 million) annually, of which there are several hundred based in Canada, are excluded. Worldwide exploration budgets for other commodities such as uranium or industrial minerals are also excluded.

Figure 4
Canadian Mineral Property Portfolio Worldwide – Countries Accounting for 80% of Foreign Holdings Located Outside the United States, 1995 and 1996
Companies of all Sizes Listed on Canadian Stock Exchanges



Source: Natural Resources Canada, based on *MIN-MET CANADA* database, ROBERTSON INFO-DATA Inc., Vancouver, British Columbia, and used under licence.

Figure 5
Foreign Mineral Property Transactions Over the Two-Year Period July 1994 Through June 1996 – Countries Accounting for 80% of Transactions
Canadian Junior Mining Companies



Source: Natural Resources Canada, based on a study prepared in 1996 by Hrayr Agnerian of Roscoe, Postle Associates Inc., Toronto, Ontario, and reviewed in the *Canadian Mining Journal*, August 1996, p. 5.

average annual compound rate of about 14% since 1992. In 1996, Canadian-based companies held over 30% of the larger-company market for exploration in the United States; taking inflation into account, the Canadian share was only 20% in 1992.

At the end of 1996, the United States accounted for more than one third of all properties held abroad by companies of all sizes listed on Canadian stock exchanges (Figure 2). The United States is likely to remain, for some time, the locus of the largest portfolio of mineral properties held by Canadian companies abroad. Between 1992 and 1995, the number of properties held in the United States by companies of all sizes listed on Canadian stock exchanges stood at about 1000 per year, but increased to over 1100 in 1996.

In 1996, there were more than 400 companies of all sizes listed on Canadian stock exchanges with projects in 34 of the 50 states in the United States. Most of their projects are located in the western United States in Nevada, California, Arizona, Alaska, Idaho, Montana, Washington, Colorado and Utah. Nevada alone accounts for almost 400 properties, or more than one third of the Canadian portfolio in the United States.

Of all the Canadian-based companies, Barrick Gold Corporation and Placer Dome Inc. planned the largest exploration programs in the United States during 1996. Between them these companies expected to spend over $67 million. Barrick is concentrating on the Goldstrike and other properties located on the Carlin gold trend in Nevada, and Placer Dome is focussing on the South Pipeline gold project on the Battle Mountain-Eureka gold trend in Nevada and on the Donlin Creek gold project in Alaska.

Activity in Latin America and the Caribbean

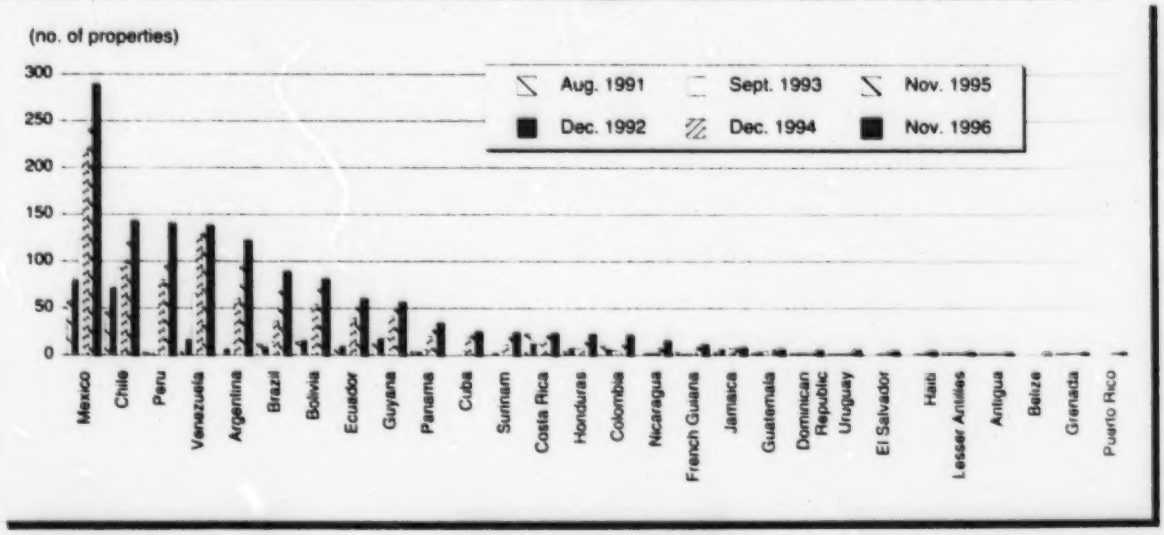
In 1996, the larger-company exploration market in Latin America and the Caribbean was valued at some $1.3 billion, or 27% of the $4.8 billion larger-company market worldwide (Figure 1).

Latin America is the region of the globe with the most Canadian mineral exploration activity. The larger Canadian-based companies were expected to spend $485 million on exploration in Latin America and the Caribbean during 1996, a substantial increase over the $393 million that they had budgeted for 1995 (Figure 3).

Adjusted for inflation, Canadian exploration budgets for Latin America grew at an average annual compound rate of over 50% between 1992 and 1996. In 1996, Canadian-based companies controlled 37% of the larger-company market in Latin America, the largest share, by far, in the region. In 1992, the Canadian share of that market, adjusted for inflation, was 27%.

During 1996, the number of properties held in Latin America by companies of all sizes listed on Canadian stock exchanges surpassed, for the first time, the

Figure 6
Canadian Mineral Property Portfolio in Latin America and the Caribbean, by Country, 1991-96
Companies of all Sizes Listed on Canadian Stock Exchanges



Source: Natural Resources Canada, based on *MIN-MET CANADA* database, ROBERTSON INFO-DATA Inc., Vancouver, British Columbia, and used under licence.

number held in the United States (Figure 2). These companies held more than 850 properties in South America, 280 in Mexico, and 140 in Central America and the Caribbean. They held about 140 in each of Chile, Peru and Venezuela, more than 120 in Argentina, and more than 50 in each of Brazil, Bolivia, Ecuador and Guyana (Figure 6).

At the end of 1996, there were at least 260 Canadian mining companies active in South America, 120 in Mexico, and 90 in Central America and the Caribbean.

In 1996, Canadian-based companies planned the largest exploration programs for several countries of Latin America and the Caribbean: Barrick in Chile, Bolivar Goldfields Ltd. in Colombia, Placer Dome in Costa Rica, KWG Resources Inc. in Cuba and Haiti, Eldorado Gold Corporation in the Dominican Republic, Greenstone Resources Ltd. in Honduras, Triton Mining Corp. in Nicaragua, Teck Corporation in Panama, Cambior inc. in Surinam, and Rea Gold Corporation in Uruguay.

Mexico

In 1996, the larger Canadian-based companies planned to spend more than $70 million on exploration in Mexico, equivalent to about 40% of the market there. Mexico remains, by far, the Latin American country where Canadian companies are the most active. During 1994, there was a significant increase in the average size of mineral property portfolios held by Canadian companies in Mexico and, at the end of that year, companies of all sizes listed on Canadian stock exchanges had projects in at least half of Mexico's 31 states.[4]

For 1996, Farallon Resources Ltd. and Teck planned the largest Canadian exploration programs in Mexico. Between them, these companies were expected to spend more than $25 million in that country. Farallon planned to spend $15 million on the Campo Morado gold-silver property located in the state of Guerrero, and Teck planned to spend $15 million on a dozen properties in Mexico with a substantial portion allocated to the Nukay gold project, also in the state of Guerrero.

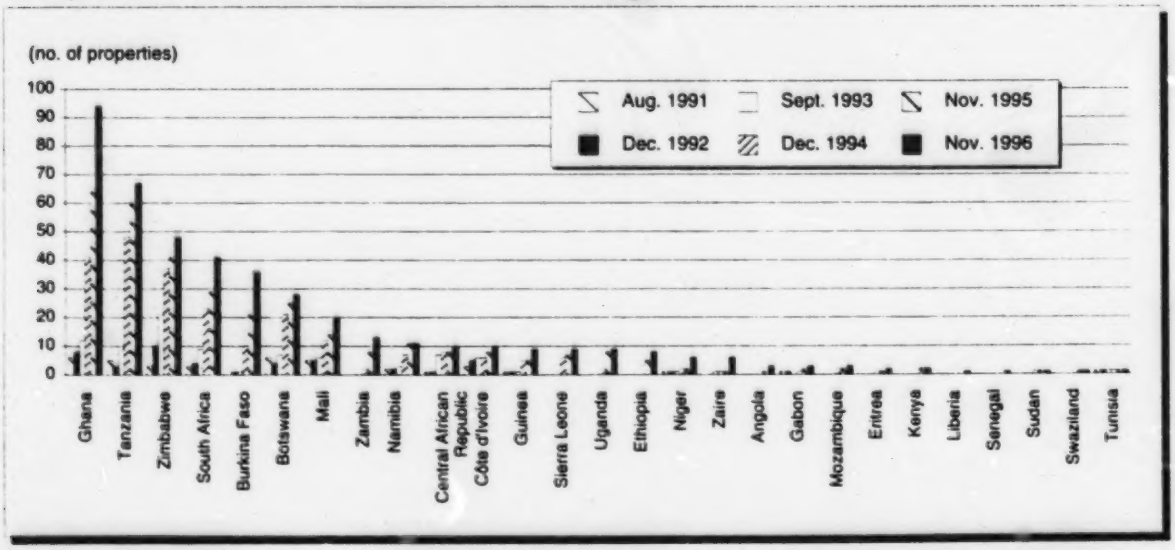
Activity in Africa

In 1996, the larger-company exploration market in Africa was valued at some $570 million, or 12% of the $4.8 billion larger-company market worldwide.

The larger Canadian-based companies planned to spend over $112 million on exploration in Africa during 1996; this amount is double what they had budgeted for 1995, and is equivalent to about 20% of the larger-company market on that continent.

Between 1992 and 1996, companies of all sizes listed on Canadian stock exchanges acquired mineral properties in Africa at an average annual compound rate of 75%. As a consequence, at the end of 1996, more than 170 of these companies held interests in over

Figure 7
Canadian Mineral Property Portfolio in Africa, by Country, 1991-96
Companies of All Sizes Listed on Canadian Stock Exchanges



Source: Natural Resources Canada, based on *MIN-MET CANADA* database, ROBERTSON INFO-DATA Inc., Vancouver, British Columbia, and used under licence.

440 mining properties located in 27 countries in Africa. They held almost 100 properties in Ghana alone, almost 70 in Tanzania, 40 or more in each of Zimbabwe, South Africa and Burkina Faso, and 20 or more in each of Botswana and Mali (Figure 7).

During 1996, 15 Canadian-based companies planned mineral exploration programs valued at over $4 million each, mainly in West Africa, Tanzania or Zimbabwe. Although gold is the primary Canadian target in Africa, there is nonetheless a considerable variety in the mineral commodities sought there by Canadian companies. Some of the commodities of interest to Canadians on that continent are not currently produced or are not widely sought in Canada.[5]

Activity in Southeast Asia and China

In 1996, the larger-company exploration market in the broad area of Southeast Asia and China was valued at over $400 million, or 8% of the $4.8 billion larger-company market worldwide. The larger Canadian-based companies planned to spend at least $120 million on exploration in that region during 1996, equivalent to about 30% of the market there.

At the end of 1996, there were 150 companies of all sizes listed on Canadian stock exchanges active in eight countries of Southeast Asia as well as in China (Figure 8). These companies held interests in almost 270 properties in that region, a dramatic increase over the course of one year.

Exploration by Calgary-based Bre-X Minerals Ltd. at its Busang property in the province of East Kalimantan on the island of Borneo has created an exploration boom in Indonesia. From Canada alone, there were about 100 companies of all sizes listed on Canadian stock exchanges active in Indonesia at the end of 1996, up from only a dozen one year earlier. At the end of 1996, these companies held interests in 140 properties, up from less than 20 one year earlier. The larger Canadian-based companies were expected to spend about $90 million in Indonesia during 1996.

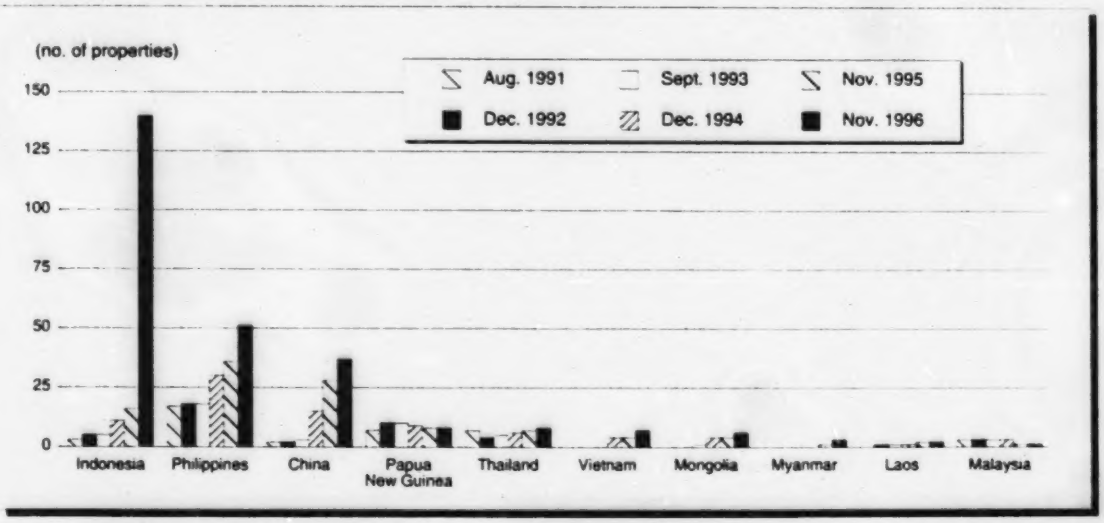
The Philippines continue to attract Canadian mining companies. At the end of 1996 there were over 20 companies of all sizes listed on Canadian stock exchanges with interests in over 50 mineral properties in that country. About one third of their projects involve gold, one third involve copper-gold, and the rest involve a variety of other metals including chromium, cobalt, copper, nickel, molybdenum and zinc.

Over the past three years, there has been growing interest on the part of Canadian mining companies in mainland China. In late 1996, there were more than 20 companies of all sizes listed on Canadian stock exchanges with interests in close to 40 mineral properties in that country. About half the projects in China involve gold. The other half involve copper-lead-zinc and a variety of other targets including diamonds, rare earths and zeolites.

Activity in the Former Soviet Union

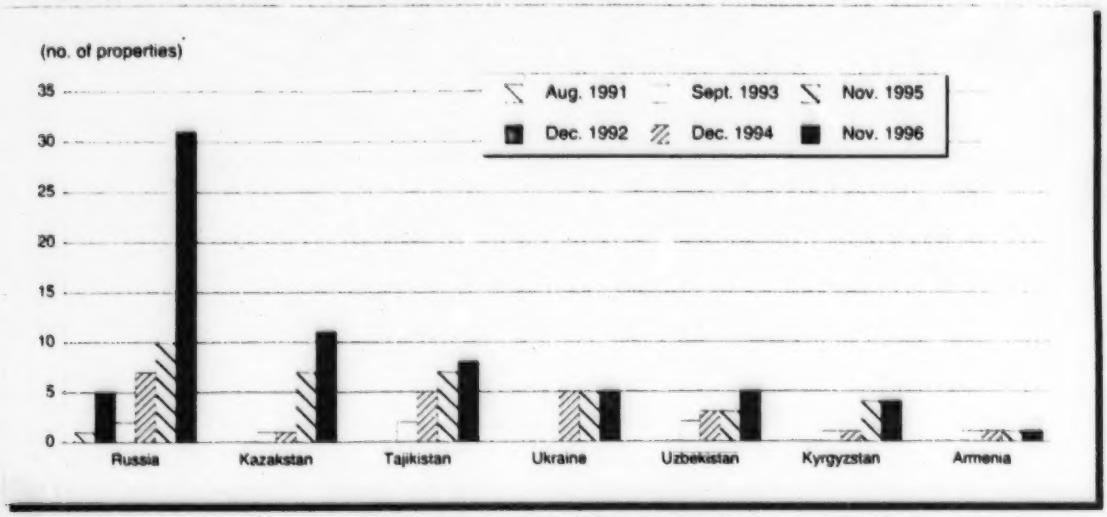
In 1996, the larger-company exploration market in the former Soviet Union (FSU) was valued at over $100 million, or 2% of the $4.8 billion larger-company

Figure 8
Canadian Mineral Property Portfolio in Southeast Asia, China and Mongolia, by Country, 1991-96
Companies of All Sizes Listed on Canadian Stock Exchanges



Source: Natural Resources Canada, based on *MIN-MET CANADA* database, ROBERTSON INFO-DATA Inc., Vancouver, British Columbia, and used under licence.

Figure 9
Canadian Mineral Property Portfolio in the Former Soviet Union, by Country, 1991-96
Companies of All Sizes Listed on Canadian Stock Exchanges



Source: Natural Resources Canada, based on *MIN-MET CANADA* database, ROBERTSON INFO-DATA Inc., Vancouver, British Columbia, and used under licence.

market worldwide. The larger Canadian-based companies were expected to spend at least $45 million on exploration in the FSU during 1996, equivalent to about 40% of the market in that region.

Over the past few years, there has been growing Canadian interest in participating in mineral opportunities in the FSU (Figure 9). At the end of 1996, there were almost 40 companies of all sizes listed on Canadian stock exchanges with interests in 65 mineral properties in seven countries of the FSU. The current strategy of most of these companies appears to be to target a single country.

Russia is by far the area of the FSU where Canadian companies are the most active. During 1996, the number of properties held by companies of all sizes listed on Canadian stock exchanges increased threefold to 30. At the end of 1996, there were at least 13 Canadian companies active in Russia. Gold and, to a lesser extent, diamonds are the main exploration targets of Canadian companies in that country.

In early 1996, Nelson Gold Corporation Ltd., which is listed in Canada but based in the United Kingdom, started production at its Jilau (Zaravshan project) open-pit gold mine in Tajikistan. In January 1997, Cameco Corporation began production at its one-third-owned 500 000-oz/y open-pit Kumtor gold mine in Kyrgyzstan. Canadian companies also have mineral property interests in Kazakstan, the Ukraine and Uzbekistan.

Activity in Australia

In 1996, the larger-company market for exploration in Australia was valued at some $900 million, or 19% of the $4.8 billion larger-company market worldwide (Figure 1). The larger Canadian-based companies planned to spend at least $7 million on exploration in that country during 1996. Placer Pacific Limited, which is Australian based but more than 75% controlled by Canadian-based Placer Dome, intended to spend about $13 million in Australia during 1996. Other Canadian companies that planned exploration programs in Australia include William Resources Inc., Noranda Inc., and Tri-Origin Exploration Ltd.

Since 1992, the larger Canadian-based companies have held no more than about 1% of the larger-company market for exploration in Australia. As well, companies of all sizes listed on Canadian stock exchanges probably have held, on average, no more than 50 properties per year in that country.

CANADIAN MARKET SEGMENT

Total Exploration Market in Canada

In 1996, the total exploration market in Canada was valued at about $875 million.

The value of the total exploration market in Canada is based on comprehensive Canadian government statistics that cover the activities of both the senior

companies and the junior companies. Canada is one of the few countries for which comprehensive exploration statistics are available. For the world as a whole, statistics are available only for the group of larger companies.

Advanced Projects in Canada

In late 1996, there were more than 4900 active mineral properties in Canada spanning the various phases of mineral resource development from conceptualization of mineral exploration programs through production. The number of mineral properties active in Canada has remained fairly constant over the past five years (Figure 2).

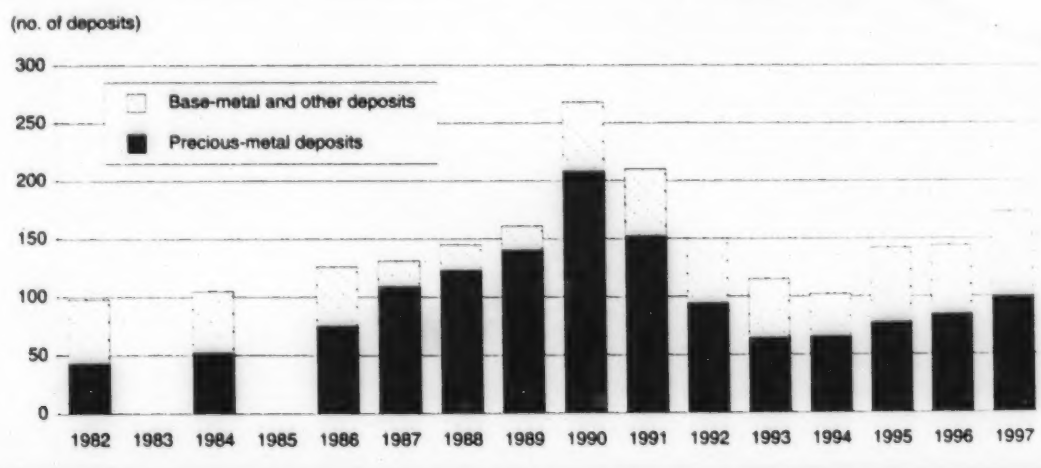
Since 1994, there has been a significant increase in Canada in the number of mineral deposits undergoing geological, engineering, environmental and economic studies aimed at supporting a possible production decision (Table 1, Figure 10). As a result, in early 1997, there were at least 173 projects undergoing mineral deposit appraisal, which represents a 20% increase from 144 such deposits in early 1996. The deposits currently being appraised contain one or more of barite, bismuth, calcium carbonate, cobalt, copper, chromium, fluorine, gallium, garnet, gold, indium, iron, lead, lithium, magnesium, molybdenum, nickel, palladium, phosphorus, platinum, silver, titanium, tungsten, vanadium, zinc or zircon. Of the 173 mineral deposits undergoing appraisal in Canada, 99, or 60%, are precious-metal deposits and 74, or 40%, are base-metal or other types of deposits.

Larger-Company Market in Canada

In 1996, the larger-company market for exploration in Canada was valued at over $630 million, or 13% of the $4.8 billion larger-company market worldwide (Figure 1). Canada's share of the larger-company global budgets for exploration has remained in the 12-13% range over the last three years. In 1996, the larger-company market in Canada represented about 70% of the total market for mineral exploration in Canada. The aggregate exploration budgets of the world's larger companies for Canada have increased most years since 1992, but they underwent especially strong growth during 1996 (Figure 3).

The larger Canadian-based companies were expected to spend almost $390 million in Canada during 1996, up from $296 million in 1995. In 1996, these companies controlled slightly more than 60% of the larger-company market for mineral exploration in Canada, which is by far the dominant share. The situation is identical in the United States and Australia where American- and Australian-based companies control the largest share of their respective domestic larger-company markets for mineral exploration. In 1992, Canadian-based companies controlled 80% of the larger-company exploration market in Canada. With increasing globalization, the market share controlled by the larger domestic firms has also declined in the United States and Latin America. In Australia, on the other hand, Australian companies still control 80% of their domestic market (Figure 1).

Figure 10
Mineral Deposits Undergoing Active Appraisal in Canada as at January 1 of Each Year, 1982-97



Source: Natural Resources Canada, based on company reports.
Notes: Deposit appraisal includes all of the activities in the process of mineral resource development that must be carried out from the time that a mineral deposit is discovered until sufficient information has been obtained to decide whether or not a production decision is warranted. The deposits currently being appraised contain one or more of barite, bismuth, calcium carbonate, cobalt, copper, chromium, fluorine, gallium, garnet, gold, indium, iron, lead, lithium, magnesium, molybdenum, nickel, palladium, phosphorus, platinum, silver, titanium, tungsten, vanadium, zinc or zircon. Data for 1983 and 1985 were not compiled.

Globalization of the mining industry is not only providing benefits to developing countries. Over the last five years, much of the increase in exploration expenditures of the larger companies operating in Canada has come from foreign investment by Australian-based, American-based and European-based companies. Large foreign-based multi-national companies were expected to spend over $240 million in Canada during 1996, an increase of more than 40% over their 1995 budgets. The budgets of the larger foreign multi-national companies represent 38% of the total budgeted for 1996 for Canada by all of the larger companies, including Canadian companies. Adjusted for inflation, foreign multi-national exploration budgets for Canada in 1992 only totalled about $70 million.

Large foreign-based multi-national companies active in Canada include BHP Minerals Pty Ltd., WMC Limited and the Ashton Group, all based in Australia; Echo Bay Mines Ltd., Royal Oak Mines Inc., the Homestake Group, Battle Mountain Gold Company, Phelps Dodge Corporation, Cyprus Amax Minerals Company, Santa Fe Pacific Gold Corp., FMC Gold Company, Newmont Gold Company and Pegasus Gold Inc., all based in the United States; the RTZ-CRA Group, the Minorco Group, and Outokumpu Metals and Resources Oy, all based in Europe; the Gencor Group and the De Beers Group based in Africa; and Korea Zinc.

SUMMARY AND CONCLUSIONS

Mining offers the prospect of diversifying and strengthening the economies of many nations. The development of a mining industry accelerates the revision of laws and regulations aimed at protecting foreign investment. The effectiveness of such initiatives is most noticeable in the growth of exploration activity that has taken place in developing countries around the world. There is every indication that, for the foreseeable future, the legislative process that is currently increasing the efficiency of mineral resource development worldwide will continue, if not accelerate.

The mining industry is becoming evermore globalized, and growth in mining activity is expected to continue in many countries of Latin America, Africa, Southeast Asia and the former Soviet Union. In many countries in these regions, there is enormous geological potential, but modern exploration techniques have yet to be widely used. The specific loci of future growth in mineral exploration and development will be influenced significantly by industry perceptions of country risks and rewards.

Canadian-based mining companies now control almost 30% of the world's larger-company market for precious-metal, base-metal and diamond exploration, and they hold the dominant share of that market in both Canada and Latin America. They have also diversified their mineral project portfolios to more than 100 foreign countries.

Canadian expertise at raising risk capital from investors in Canada, the United States, Europe, Asia and elsewhere has facilitated the penetration by Canadian companies of the mining market around the world. As a consequence of the globalization of the Canadian mining industry, there exists unprecedented opportunity for Canadian suppliers of goods and services for mineral exploration, development or production to expand their exports significantly.

The world's foreign multi-national companies are diversifying their mineral property portfolios not only into developing countries, but also into developed countries, including Canada. During the last five years, Canada has attracted increasing amounts of exploration investment from some of the larger foreign-based companies, which has resulted in a substantial increase in the total amount of exploration activity in this country.

For the foreseeable future, Canadian companies will continue to be a driving force for exploration, development and mining in both Canada and abroad. Canadian mining companies, and Canadian suppliers of goods, services and risk capital, can be expected to make further gains in foreign mining markets.

REFERENCES

[1] Most of the information on the larger-company exploration market worldwide is based on the September 1992, September 1993, September 1994, September 1995 or September 1996 edition of *Corporate Exploration Strategies: A Worldwide Analysis*, published annually by the Metals Economics Group of Halifax, Nova Scotia.

[2] Most of the information on the mineral property portfolio of companies of all sizes listed on Canadian stock exchanges is derived from the *MIN-MET CANADA* database produced by ROBERTSON INFO-DATA Inc. of Vancouver, British Columbia.

[3] Agnerian, Hrayr, Survey of *Mineral Property Transactions*, July 1994-June 1996, Roscoe Postle Associates Inc., Toronto, Ontario, 1996, 11 pp. This paper was also reviewed in the *Canadian Mining Journal*, August 1996, p. 5.

[4] More detailed information on penetration of the Mexican mineral exploration market by Canadian mining companies, including a table of companies and their projects, can be found in André Lemieux, "Canadian Mining Activity in Mexico," *World Mineral Notes*, Vol. 11, No. 1, March 1995, Mining Sector, Natural Resources Canada, Ottawa, pp. 23-34.

[5] For an overview of the scope of Canadian mineral projects in Africa during 1995, see André Lemieux, "Canada and the Globalization of the Mining Industry," *Mineral Industry Review*, Fall 1996, Natural Resources Canada, Ottawa, pp. 32-33.

Note: Information in this review was current as at January 31, 1997.

TABLE 1

SELECTED MINERAL DEPOSITS UNDERGOING ACTIVE APPRAISAL IN CANADA AS AT JANUARY 1997

- DEPOSITS: Individual deposits have been selected on the basis of public information. Deposits committed for production during 1996 are excluded.
- TONNAGES and GRADE: As reported by companies or, where necessary, from the secondary source that appeared to be the most reliable. Data reported in imperial units were converted to metric units and rounded to the corresponding number of significant digits. Tonnage and grade descriptions such as "probable and possible" are those reported by companies.
- COMPANIES: Where two or more companies are identified with a deposit, the first is usually the operator.

Deposits and Companies	Tonnage and Grade Description	Tonnage[1]	Grade[2]							Comments
			Cu	Ni	Pb	Zn	Mo	Ag	Au	
		(tonnes)	(%)	(%)	(%)	(%)	(%)	(g/t)	(g/t)	
NEWFOUNDLAND										
Batters Brook - Batters Brook zone Major General Resources Ltd.	Geological	96 000	0.84	–	6.0	9.1	–	87.	1.7	Discovered in late 1995.
Batters Brook - Orion Major General Resources Ltd.	Estimated	2 200 000	–	–	–	–	–	–	2.1	Discovered in December 1995. Drilling as at September 1996.
Buchans mine (tailings) Candorado Operating Company Ltd.	Indicated recoverable	1 900 000	0.36	–	0.59	2.19	–	37.	0.86	Metallurgical studies completed in 1995 confirmed that marketable copper and lead-zinc concentrates can be produced. Planned, in early 1996, to complete evaluation of tailings. Deposit also grades 40% **barite**.
Cape Ray Royal Oak Mines Inc.	Diluted mineable	455 061	–	–	–	–	–	–	10.1	Company announced, in July 1996, that it had purchased the property from American Gem Corporation and that it planned to process ore at its existing Hope Brook concentrator starting in 1997.
Pine Cove NovaGold Resources Inc. New Island Minerals Ltd. Electra Mining Consolidated Ltd.	Mineable open-pit	3 000 000	–	–	–	–	–	–	2.95	Capital cost of a 1500-t/d vat-leaching operation estimated at $13 million. Planned, in July 1996, to process a 30 000-t sample at the Rambler concentrator to confirm milling costs and recovery.
Rendell Jackman - Hammerdown and Rumbullion zones Major General Resources Ltd.	Indicated	550 000	–	–	–	–	–	–	18.	Preliminary evaluation prepared in October 1994 estimated the capital cost of a 400-t/d underground operation at $22 million. Development postponed pending results of program at Batters Brook.
St. Lawrence mine (fluorspar) Burin Minerals Ltd.		5 453 000	–	–	–	–	–	–	–	Deposit grades 50% CaF_2. Feasibility study completed and resources confirmed by Roscoe, Postle Associates Inc. in May 1996. Company seeking production financing as at September 1996.
Voisey's Bay Voisey's Bay Nickel Company Limited	Reserves Ovoid zone Indicated Eastern Deeps Western extension	31 700 000 50 000 000 ..	1.68 0.67 ..	2.83 1.36 ..	– –	– –	– –	– –	– –	Discovered in late 1994. Production planned from an open pit in the second half of 1999. The Ovoid zone also grades 0.12% **cobalt**. The Eastern Deeps zone also grades 0.09% **cobalt**. The total indicated resource at Voisey's Bay is 150 Mt. Announced in November 1996 that Argentia, Newfoundland, had been selected as the site for a nickel-cobalt smelter and refinery complex for production starting in the year 2000. The operation is expected to produce 270 million lb of nickel and 200 million lb of copper annually.
NEW BRUNSWICK										
Canoe Landing Lake Nebex Resources Ltd.	Geological	20 000 000	0.56	–	0.64	1.8	–	32.	1.2	A 13-hole drilling program outlined 2.4 Mt grading 0.69% copper, 2.51% zinc, 0.7% lead, 46 g/t silver and 1.4 g/t gold. Planned, in April 1996, additional drilling.

TABLE 1 (cont'd)

Deposits and Companies	Tonnage and Grade Description	Tonnage[1]	Grade[2]							Comments
			Cu	Ni	Pb	Zn	Mo	Ag	Au	
		(tonnes)	(%)	(%)	(%)	(%)	(%)	(g/t)	(g/t)	
NEW BRUNSWICK (cont'd)										
Half Mile Lake Noranda Mining and Exploration Inc. Conwest Exploration Company Limited	Possible mineable	6 528 000	0.09	–	3.23	9.13	–	39.48	–	Located 20 km from the Heath Steele concentrator. In-fill drilling and engineering evaluation of deposit carried out in late 1994.
Heath Steele mine area Noranda Mining and Exploration Inc.	Geological	19 280 000	0.6	–	2.6	7.2	–	52.	–	Potential feed for Heath Steele operation.
Mount Pleasant mine Adex Mining Corp. (flotation and bio-oxidation)	Proven-possible	16 100 000	0.07	–	–	0.41	0.066	–	–	A pre-feasibility study completed, in 1994, by D.M. Fraser Services Inc. estimated the capital cost of re-opening the mine at a rate of 2000 t/d at $46 million. The proven-possible tonnage also grades 0.29% **tin**, 0.07% **bismuth**, 1.88 g/t **indium** and 0.17% **tungsten**. There is also some **gallium**. The company reports that Mount Pleasant contains the world's largest **indium** reserves, North America's largest **tin** reserves and one of the largest reserves of **bismuth**. The deposit also contains an additional 38 Mt in the drill-indicated category. Davy International has been retained to prepare a feasibility study by November 1996. Production could start in early 1997.
Taylor Brook Stratabound Minerals Corp.	–	295 000	–	–	..	2.3[k]	–	14.	–	Carried out a drilling, geological, geophysical and geochemical program during summer of 1996. Drilling as at December 1996.
QUEBEC										
Alguebelle (Fayolle) Minorca Resources Inc. Barrick Gold Corporation	–	189 000	–	–	–	–	–	–	8.6	Reported, in September 1996, formation of a joint venture.
AurBel (Lac Herbin) Aur Resources Inc.	Preliminary inventory	352 000	–	–	–	–	–	..	6.62	Spent $1 million during 1995. Announced, in spring 1996, plans to proceed with $5.5 million underground program starting in summer.
Baie Comeau Société québécoise d'exploration minière (SOQUEM) Gaspesie, Société d'exploration pétrolière et minière Inc.	–	100 000 000	–	–	–	–	–	–	–	Tonnage grades 10% **ilmenite** and 10% **apatite**.
Barry Teck Corporation Murgor Resources Inc. Freewest Resources Canada Inc.	Drill inferred	462 000	–	–	–	–	–	–	6.9	Discovered four new zones during winter of 1995-96. Reported, in November 1996, that Teck could acquire property by spending $4.5 million over four years.
Cabre (Matagami) BHP Minerals Canada Ltd., Southern Africa Minerals Corp.	Resource	1 100 000	1.31	–	–	5.54	–	10.	0.3	Reported, in November 1995, the discovery of two new zones.
Casa Berardi - North zone TVX Gold Inc. Golden Knight Resources Inc.	Geological resource	360 000	–	–	–	–	–	–	6.2	Discovered during 1992 on north side of Casa Berardi fault.
Chevrier (Obatogamau) GéoNova Explorations Inc. Inmet Mining Corporation	Geological resource	1 060 000	–	–	–	–	–	..	6.36	Planned, in June 1996, an additional 6000 m of drilling.

Clearwater (Eau Claire/Opinaca) Société québécoise d'exploration minière (SOQUEM) Westmin Resources Limited Eastmain Resources Inc.	Inventory	270 000	–	–	–	–	–	–	6.1	Reported, in June 1996, the discovery of some new gold veins. SOQUEM planned to spend $700 000 on drilling during 1996.
Clinton New Goldcorp Ventures	–	563 000	1.88	–	–	1.	–	–	–	Planned, in June 1996, to spend $400 000 during the balance of the year.
Coleraine - Hall Coleraine Mining Resources Inc.	–	1 032 574	–	–	–	–	–	–	–	The Hall deposit grades 4.5% Cr_2O_3 and 0.17 g/t platinum. Following a pre-feasibility study by ROCHE Groupe Conseil Ltée, the company decided, in June 1996, to postpone production. The company is seeking a joint-venture partner.
Copper Mountain mine (oxide) Noranda Mining and Exploration Inc.	Probable mineable	19 496 000	0.44	–	–	–	–	..	–	Inaugurated, in August 1996, a $4.9 million SX-EW pilot plant to assess the feasibility of commercial production of copper cathode at 8000 t/y. A decision on a commercial-scale plant is expected in 1997.
Desjardins GéoNova Explorations Inc.	Geological	1 400 000	–	–	–	–	–	..	4.75	Planned, in June 1996, an additional 5500 m of drilling. Drilling as at October 1996.
Dousy - West zone Aurizon Mines Ltd. Vior Mining Exploration Co. Inc.	–	387 800	–	–	–	–	–	–	6.27	A $6.5 million program, including a 6-km road, a 16-km powerline and sinking 150 m of shaft in progress as at December 1996.
East Amphi Placer Dome Canada Limited Breakwater Resources Ltd.	Geological resource	9 089 003	–	–	–	–	–	..	3.88	Reported, in June 1996, a substantial increase in tonnage. Planned, as at November 1996, further drilling during winter of 1996-97.
Ellison Barrick Gold Corporation Yorbeau Resources Inc.	–	..	–	–	–	–	–	..	..	Drilling as at November 1996.
Goldex - Extension zone Agnico Eagle Mines Limited	Resource	23 000 000	–	–	–	–	–	..	2.5	Announced, in November 1996, the results of a 100 000-t bulk sample test. Results of feasibility study for a 5000-t/d operation expected in early 1997.
Goldfield (Goldsteck) Sphinx Mining Company Inc.	Resource	1 000 000	–	–	–	–	–	–	6.2	Reported, in July 1996, that an agreement for development had been reached with a senior company.
Hawk Ridge - Hopes Advance Troymin Resources Ltd	Resource	27 000 000	0.52	0.19	–	–	–	–	–	Announced, in October 1996, an increase in resource. Planned, as at November 1996, additional work during 1997.
Lac Pusticamica (Benoist) Murgor Resources Inc. Freewest Resources Canada Inc.	Drill-indicated probable	482 104	0.27	–	–	–	–	12.1	5.47	Discovered in 1992. Announced, in April 1996, the discovery of a new zone. Planned additional drilling starting in September 1996.
Lac Saint-Jean Bruneau Minerals Inc.	–	13 500 000	–	–	–	–	–	–	–	Reported, in November 1996, the results of metallurgical tests. Deposit contains $CaCO_3$ suitable for fine paper, plastics and pharmaceuticals.
Lac Volant Government of Quebec	–	..	..	–	–	–	–	–	–	Discovered in August 1996.
MacLeod Lake - South zone Windy Mountain Explorations Ltd Cochise Resources Inc.	–	1 000 000	0.8	–	–	–	0.22	24	0.74	A $100 000 drilling program under way as at September 1996.
Magnola Noranda Mining and Exploration Inc.	–	..	–	–	–	–	–	–	–	Company and three partners announced, in the first quarter of 1995, the construction of a $33 million pilot plant to test a process to recover magnesium from asbestos tailings. Commercial production could start in 1997.
McWatters mine McWatters Mining Inc.	Probable and possible	1 152 000	–	–	–	–	–	..	6.2	In production 1933-44. Planned, as at October 1996, to complete a ramp by January 1997.

TABLE 1 (cont'd)

Deposits and Companies	Tonnage and Grade Description	Tonnage[1]	Grade[2]							Comments
			Cu	Ni	Pb	Zn	Mo	Ag	Au	
		(tonnes)	(%)	(%)	(%)	(%)	(%)	(g/t)	(g/t)	
QUEBEC (cont'd)										
Motte Raymor Resources Ltd.	Drill indicated	4 100 000	–	–	–	–	–	–	–	Reported, in November 1996, results of bulk-sample test. Deposit grades 1.07% Li_2O.
Nateshquan (mineral sands) Tiomin Resources Inc. Shairco (Saudi Arabia)	Drill indicated	2 100 000 000	–	–	–	–	–	–	–	The deposit grades 6% heavy minerals (**ilmenite, magnetite, zircon** and **garnet**). Pre-feasibility study prepared in June 1994 by Met-Chem Engineers estimated the capital cost of a dredge mine and mineral processing facility at US$260 million. As at September 1996, completing feasibility study. The deposit could be in production by 1998.
Norebec-Manitou mine (tailings) ITEC-MINÉRAL INC.	–	10 000 000	–	–	–	0.36	–	11.7	0.35	Completed, during 1994, testing of pilot plant. Planned, in early 1996, to increase production to 5000 t/d.
OBC – A, B, C zones First Western Minerals Inc.	–	113 000 000	0.37	0.16	–	–	–	–	..	Announced, in November 1996, results of metallurgical tests. Deposit also grades 0.02% **cobalt**.
O'Brien mine (bio-leaching) Radisson Mining Resources Inc. Breakwater Resources Ltd.	–	1 270 000	–	–	–	–	–	..	8.57	Announced, in September 1995, the preliminary results of bio-leaching as a pre-treatment for the flotation of sulphide concentrates. Planned, as at December 1996, additional drilling starting in January 1997.
Siscoe mine (extension) Dynacor Mines Inc. Damontigny Mineral Resources Inc.	–	535 000	–	–	–	–	–	–	6.2	Resource recalculated during 1995.
Saint-Fabien Gaspésie, Société d'exploration pétrolière et minière Inc.	–	1 050 000	1.1	0.3	–	–	–	–	–	Reported, in April 1996, that laboratory tests were in progress.
Vezza Agnico-Eagle Mines Limited	–	2 504 000	–	–	–	–	–	–	4.63	Planned, as at November 1996, 60 000 ft of underground drilling. Potential feed, starting in early 1997, for the Eagle concentrator.
ONTARIO										
Aquarius mine[3] Echo Bay Mines Ltd.	Proven-probable	162 000	–	–	–	–	–	..	6.2	Announced, in February 1995, the discovery of an additional resource that may be mineable by open pit. Hydrometallurgical studies nearing completion as at October 1996. Planned to complete a feasibility study by year-end 1996. Production could begin by 1999.
Armistice Armistice Resources Ltd.	–	324 054	–	–	–	–	–	..	6.11	Drilling as at December 1996. Planning a bulk sample test in early 1997.
Cadieux Noranda Mining and Exploration Inc. Breakwater Resources Ltd.	Probable and possible geological	1 146 000	–	–	0.9	9.4	–	–	–	Reported, in February 1996, that Noranda had optioned the property.
Cameron Lake Cambior Inc. Nuinsco Resources Limited	Mineable	4 300 000	–	–	–	–	–	–	4.	Drilling as at July 1996.
Duport (Shoal Lake) Royal Oak Mines Inc.	Geological	1 800 000	–	–	–	–	–	–	12.	Capital cost of 450-t/d operation estimated at $50 million. Acquired by Royal Oak in early 1996. Planning to continue the environmental permitting process.

Edwards River Gold Mines Ltd. VenCan Gold Corporation	Drill indicated	394 000	–	–	–	–	–	–	16.5	River Gold acquired the right to develop and mine the deposit in late 1995. Possible feed for the Magnacon concentrator starting in 1997.
Fenn-Gib Pangea Goldfields Inc.	Drill-indicated probable	40 700 000	–	–	–	–	–	–	1.33	Reviewing, as at December 1996, results of feasibility study.
Fuller (Buffalo Ankerite) Vedron Gold Inc.	Geological	380 000	–	–	–	–	–	–	5.5	Drilling as at October 1996. Proximal to Placer Dome's Paymaster gold mine.
Garrison Twp. Hillsborough Resources Limited Jonpol Explorations Limited T & H Resources Ltd.	Drill indicated	468 100	–	–	–	–	–	..	9.6	Planned, in July 1996, to start shipping ore to Noranda by September 1996.
Hemlo Interlake Franco-Nevada Mining Corporation Limited	Geological	8 600 000	–	–	–	–	–	..	6.34	Reported, in early 1996, an agreement in principle to access deposit from the Williams mine. Plan a $3 million program over two years starting in November 1996.
Hoyle Township Black Hawk Mining Inc.	Drill inferred	697 484	–	–	–	–	–	..	11.26	Drilling as at October 1996.
Kari-Zeemel Placer Dome Canada Limited TVX Gold Inc. Pangea Goldfields Inc.	–	327 000	–	–	–	–	–	..	4.6	Proximal to Musselwhite mine. Drilling as at December 1996.
Key Lake Cyprus Canada Inc. Roxmark Mines Limited	Potential resource	10 290 000	–	–	–	–	–	–	1.49	Reported new drilling results in May 1996. Planned to evaluate additional targets on property.
Kirkland Lake - Anoki Queenston Mining Inc. Franco-Nevada Mining Corporation Limited	Resource	1 088 000	–	–	–	–	–	–	4.5	Drilling as at October 1996.
Kirkland Lake - McBean Queenston Mining Inc. Franco-Nevada Mining Corporation Limited	Resource	1 397 000	–	–	–	–	–	–	4.8	Drilling as at December 1996.
Koval Moss Resources Inc. Barrick Gold Corporation	–	426 000	–	–	–	–	–	–	5.8	Reported new drilling results in March 1996. Planned additional program on property.
Leckie Stroud Resources Ltd.	–	367 000	–	–	–	–	–	–	7.	Reported, in May 1996, an increase in resource estimate. Planned further drilling.
Madsen mine Madsen Gold Corp.	Proven-probable mineable	988 392	–	–	–	–	–	–	9.60	In production 1938-76. Dona Lake concentrator transported to property during fall of 1995. Capital cost of a 40 000-oz/y operation estimated at $15 million. Independent audit of reserves and mining costs in progress as at December 1996. Production planned for April 1997.
Marshall Lake - Main zone NWT Copper Mines Ltd. Avalon Ventures Ltd.	Inventory	1 110 000	0.94	–	–	3.20	–	75.4	–	Planned, as at October 1996, 3000 ft of drilling starting in December 1996.
Metachewan mine Royal Oak Mines Inc.	Mineable	11 620 000	–	–	–	–	–	–	3.4	Planned to continue engineering studies during 1996. Production planned for July 1998 at a capital cost of $75 million.
Maude Lake McWatters Mining Inc.	Resource	737 900	–	–	–	–	–	–	8.2	Planned, as at October 1996, to test mineralization previously intersected at depth.
Mishi MacMillan Gold Corp. Granges Inc.	Near surface	792 000	–	–	–	–	–	–	3.3	Planned, in July 1996, to prepare a feasibility study.

TABLE 1 (cont'd)

Deposits and Companies	Tonnage and Grade Description	Tonnage[1]	Grade[2] Cu	Ni	Pb	Zn	Mo	Ag	Au	Comments
		(tonnes)	(%)	(%)	(%)	(%)	(%)	(g/t)	(g/t)	
ONTARIO (cont'd)										
Montcalm Outokumpu Mines Ltd.	Indicated and inferred resources	6 900 000	0.7	1.6	–	–	–	–	–	Resource increased during 1994. Planned, as at November 1995, to complete a decline by mid-1997.
Moss Lake Moss Lake Gold Mines Ltd.		60 000 000	–	–	–	–	–	–	1.1	Drilling program carried out during winter of 1995 to assess the potential of mining higher-grade portions of the deposit. Planned, in April 1996, to prepare an economic evaluation.
Napean Bay (refinery sludge) J.A.G. Mines Ltd.	–	..	–	–	–	–	–	..	..	Planned, in July 1996, to spend $332 000 to assess the recoverability of gold, silver, **platinum** and **palladium** from sludges produced, since 1908, by the Royal Canadian Mint.
Nickel Rim Falconbridge Limited	Undiluted inventory	520 000	25.53	4.13	–	–	–	–	–	Discovery reported in 1993. Deposit also grades 9.8 g/t **platinum** and 8.4 g/t **palladium**.
Northern Empire mine Roxmark Mines Limited	Drill indicated	393 600	–	–	–	–	–	–	6.5	Dewatering mine as at fall 1996. Seeking financing.
Sangold Marshall Minerals Corp.	Preliminary	100 000	–	–	–	–	–	..	5.1	New drilling results reported in August 1996. Planning further drilling.
Springpole Gold Canyon Resources Inc.	–	24 000 000	–	–	–	–	–	–	1.2	Planned, as at November 1996, a $1 million program for early 1997.
Taylor St. Andrew Goldfields Ltd.	Possible	249 000	–	–	–	–	–	..	7.2	Drilling as at November 1996.
Thorne Band-Ore Resources Ltd.	–	263 000	–	–	–	–	–	–	2.5	Discovered new zone in fall of 1996. Drilling as at December 1996.
Thunder Creek Holmer Gold Mines Limited	Preliminary resource	400 000	–	–	–	–	–	–	5.1	Drilling as at September 1996.
Thunder Lake West Teck Corporation Corona Gold Corporation	Possible resource	2 800 000	–	–	–	–	–	–	9.1	Drilling as at September 1996.
Victor Inco Limited	Geological	36 000 000	0.e	2.e	–	–	–	..	1.e	Deposit is expected to be the largest discovery in the Sudbury Basin since the 1950s. A $53 million shaft-sinking, drifting and drilling program is under way. A production decision could be made by year-end 1997.
Victoria Creek Sudbury Contact Mines Limited	Inferred resource	5 000 000	–	–	–	–	–	..	3.4	Identified new mineralization during fall of 1996. Sinking shaft as at November 1996.
Vogel Black Hawk Mining Inc. Kinross Gold Corporation	Preliminary resource	700 000	–	–	–	–	–	–	11.3	Drilling as at November 1996. Planned to complete a $1 million program by fall of 1997.
Werner Lake mine Canmine Resources Corporation Red Engine Resources Corporation	–	14 000	0.26	–	–	–	–	–	3.87	Planned, in July 1996, a bulk sample test from the West Cobalt zone. The deposit also grades 1.57% **cobalt**.
Young-Shannon Young-Shannon Gold Mines, Limited	Reserve C zone Drill-indicated C Prime zone	1 000 000 631 207	– –	– –	– –	– –	– –	– –	7. 12.	Drilling as at September 1996.

MANITOBA										
Eldon Lake Aur Resources Inc. Thunderwood Resources Inc. Consolidated Abitibi Resources Limited	Preliminary resource	508 000	0.9	–	–	3.1	–	..	..	Planned, in January 1996, to drill an additional 1535 m.
Fer - Fer zone Canmine Resources Corporation	Geological Fer zone	1 700 000	0.61	–	0.34	3.21	–	15.4	1.	Drilled during winter of 1995-96.
	Geological Island Lake zone	300 000	1.	–	..	5.02	–	17.8	0.2	
Frances Lake Aur Resources Inc. Thunderwood Resources Inc. Consolidated Abitibi Resources Limited	Resource	310 000	..	–	..	7.2	–	25.	..	Planned, in January 1996, to drill an additional 3085 m.
Keystone - Dot Lake Black Hawk Mining Inc.	Resource	1 023 000	–	–	–	–	–	–	4.4	Potential feed for Lynn Lake concentrator.
Keystone - MacLellan mine (Hisku) Granduc Mining Corporation Black Hawk Mining Inc.	Mineable	114 900	–	–	–	–	–	–	7.7	In production 1986-89. Pre-feasibility study completed during summer 1995. Announced, in October 1995, that a production decision was being deferred.
Keystone - T1A Black Hawk Mining Inc.	Resource	260 000	–	–	–	–	–	–	1.9	Potential feed for Lynn Lake concentrator.
Minago Black Hawk Mining Inc.	Geological	10 502 000	..	1.19	–	–	–	..	..	Feasibility study, prepared in 1991 by Fluor Daniel Wright Engineers Limited, estimated the capital cost of a 3200-t/d operation at $120 million. Also contains **cobalt**. Looking for partner.
Nicobe Aur Resources Inc. Thunderwood Resources Inc. Consolidated Abitibi Resources Ltd.	Resource	180 000	..	–	..	5.5	–	..	..	Planned, in January 1996, to drill five holes.
Nokomis Lake Pioneer Metals Corporation	Resource	349 110	–	–	–	–	–	–	6.10	Planned, in September 1996, to drill eight holes by August 1997. Proximal to Puffy Lake mine.
Pipe Deep Inco Limited	Resource	4 000 000	..	2.32	–	–	–	..	..	Discovered in 1994. Also contains **cobalt** and **platinum group metals**. Testing continuity between Pipe Deep and high-grade nickel ore intersected beneath Pipe open pit.
Pipestone Lake Gossan Resources Ltd. Cross Lake Mineral Exploration Inc.	–	449 000 000	–	–	–	–	–	–	–	Discovery announced in 1993. Deposit grades 4.42% TiO_2. The main zone contains 23 Mt grading 8.72% TiO_2, 42.75% Fe_2O_3 and 0.58% V_2O_5 to 300 m. US$200 million required to develop. Metallurgical studies in progress as at December 1996.
Puffy Lake mine Pioneer Metals Corporation	Recoverable proven and probable	855 100	–	–	–	–	–	–	6.7	Feasibility study prepared in summer of 1993 estimated the capital costs of a 1000-t/d operation at $8.4 million. In-fill drilling carried out in February 1995. Planned, as at September 1996, to trench.
Werner Lake - Maskwa West Canmine Resources Corporation	–	700 000	0.20	1.2	–	–	–	–	–	Drilling as at December 1996.
SASKATCHEWAN										
Bigstone Lake Aur Resources Inc. Thunderwood Resources Inc. Consolidated Abitibi Resources Ltd. Cameco Corporation	–	3 580 000	1.8	–	–	1.1	–	–	–	Planned, in March 1996, additional drilling.
Goldfields - Athona and Box Greater Lenora Resources Corp.	Proven, probable and possible resource	10 500 000	–	–	–	–	–	–	2.19	Feasibility study prepared by H.A. Simons Ltd. estimated the capital cost of a 6000-t/d operation at $66.1 million. Revised resource estimate reported in December 1996.

TABLE 1 (cont'd)

Deposits and Companies	Tonnage and Grade Description	Tonnage[1]	Grade[2]							Comments
			Cu	Ni	Pb	Zn	Mo	Ag	Au	
		(tonnes)	(%)	(%)	(%)	(%)	(%)	(g/t)	(g/t)	
SASKATCHEWAN (cont'd)										
Hanson Lake (McIlvenna Bay) Cameco Corporation Billiton Metals Canada Inc.	Geological	13 080 000	1.26	–	–	4.95	–	24.3	0.52	Pre-feasibility study prepared in 1989 estimated the capital cost of a 2700-t/d operation at $90 million. Cameco owns 67.1% of the project.
Key Lake uranium mine (tailings) Cameco Corporation	–	3 000 000	–	..	–	–	–	–	–	Key Lake tailings also contain cobalt. The capital cost of a plant to extract 580 000 lb of cobalt and 7 million lb of nickel per year for 11 years is estimated at $45 million. A pilot plant was built during 1995. Production could begin in 1997.
Knife Lake (Mokoman) Leader Mining International Copperquest Inc.	Drill indicated	6 000 000	1.	–	–	–	–	–	–	Planned, in May 1996, to spend $3 million over three years.
Laurel Lake (Amisk) Claude Resources Inc. Cameco Corporation Husky Oil Corporation Ltd.	Resource	1 600 000	–	–	–	–	–	–	13.	Reported, in November 1996, an increase in resource estimate. Planning additional drilling.
Tower East Golden Rule Resources Ltd.	Drill indicated	921 900	–	–	–	–	–	–	6.9	Considering, as at September 1996, processing 85 000 oz at the Joiu concentrator.
Woody Lake - B zone Tyler Resources Inc. Golden Rule Resources Ltd. Cameco Corporation	Inferred geological	314 000	–	–	–	–	–	–	4.8	Proximal to the Komis deposit.
Woody Lake - Golden Heart Tyler Resources Inc. Golden Rule Resources Ltd. Cameco Corporation	Geological	687 010	–	–	–	–	–	–	10.	Proximal to the Komis deposit. Compiling drilling data as at December 1996.
BRITISH COLUMBIA										
Akie (Getaga) Ecstall Mining Corporation Inmet Mining Corporation	High-grade core	12 000 000	–	–	1.5	8.5	–	17.1	–	Planned, as at November 1996, to complete a $1.2 million program by December 1997.
Blackdome mine Clairstaker Resources Ltd. Petro Plus Inc.	Resource	160 000	–	.	–	–	–	37.0	16.	Planned, in May 1996, a $2.5 million program.
Bronson Slope International Skyline Gold Corporation	Drill-indicated geological resource	102 000 000	0.15	–	–	–	0.007	4.08	0.72	Discovered in 1993. Potential 12 000-t/d open-pit operation with a capital cost estimated at $130 million. Planned, in March 1996, to acquire neighbouring Snip mine from Cominco.
Caribou Gold Quartz mine International Wayside Gold Mines Ltd.	Indicated open-pit resource	1 000 000	–	–	–	–	–	–	4.1	Drilling as at October 1996.
Cottonbelt Can Quest Resources Corporation	Geological resource	750 000	–	–	..	11.8	–	55.	–	Drilled in late 1995. Planned, in August 1996, additional drilling.
Engineer mine Winslow Gold Corp.	Indicated	50 000	–	–	–	–	–	–	..	Milled 345 t during 1995. Planned, as at April 1996, to mine 5000 t.
Expo - Hushamu zone Jordex Resources Inc.	Proven and probable	173 000 000	0.272	–	–	–	0.009	–	0.3	Located 26 km from Island Copper mine, which closed in early 1996. Looking for partner.
Getty North Getty Copper Corporation	Oxide resource	12 000 000	0.5	–	–	–	–	–	–	Reported drilling results in April 1996. Planned further drilling. Proximal to Highland Valley operation.

Giant Copper - AM Breccia Imperial Metals Corporation	Indicated open-pit	26 800 000	0.653	–	–	–	–	12.3	0.38	Carried out airborne geophysics in early 1996. Waiting, as at fall 1996, on drill results.
Golden Bear mine - Kodiak A North American Metals Corp.	Mineable open-pit	824 000	–	–	–	–	–	–	3.3	Reported positive feasibility study in April 1996. Production expected in summer of 1997.
Golden Bear mine - Kodiak B North American Metals Corp.	Geological	247 000	–	–	–	–	–	–	7.8	Reported increase in resource in September 1996.
Golden Bear mine - Ursa North American Metals Corp.	Mineable open-pit	511 000	–	–	–	–	–	..	7.0	Reported positive feasibility study in April 1996. Production expected in summer of 1997.
East Low-Grade Stockpile North American Metals Corp.	–	2 470 000	–	–	–	–	–	–	1.3	Reported drilling results in August 1996.
Harmony (Cinola) - Specogna Misty Mountain Gold Limited	Open-pit	31 300 000	–	–	–	–	–	–	2.2	Metallurgical studies, environmental studies and drilling under way as at October 1996.
Hearn Hill - high-grade core Booker Gold Explorations Limited	Resource	28 000 000	0.8e	–	–	–	–	–	1.	Reported the discovery of new mineralization. Drilling as at December 1996.
JD - Finn zone AGC Americas Gold Corp.	Preliminary possible resource	148 000	–	–	–	–	–	–	4.5	Planned, in August 1996, a 30 000-ft drilling program.
Kemess North Royal Oak Mines Inc.	Geological	157 000 000	0.18	–	–	–	–	–	0.38	Proximal to Kemess South deposit being prepared for production in early 1998.
Kerr and Sulphurets Placer Dome Canada Limited	–	174 181 000	0.6e	–	–	–	–	2e	0.5	Sulphside claims of the Sulphurets deposit acquired in 1991.
Ledner Creek mine (tailings) Athabasca Gold Resources Ltd.	Reserves	600 000	–	–	–	–	–	–	1.7	Drilling and assaying of tailings completed in early 1996. Production planned for early 1997.
Ledner Creek mine (underground) Athabasca Gold Resources Ltd.	Reserves	1 174 300	–	–	–	–	–	–	4.42	Capital cost of reactivating the mine and concentrator estimated at $8 million. Reported, in September 1996, an increase in resource. Drilling as at December 1996.
Lexington Britannia Gold Corporation Bren-Mar Resources Ltd.	–	145 000	1.06	–	–	–	–	–	6.51	Drilling as at August 1996.
Old Nick mine Canadian Mine Services Ltd. Monument Mining Corporation Gold City Mining Corporation Orion International Minerals Corp. Phoenix Gold Resources Ltd.	–	100 000 000	–	0.22	–	–	–	–	–	The deposit also contains **cobalt**. Reported, in August 1996, that metallurgical tests on core recently drilled were in progress.
Poison Mountain Imperial Metals Corporation	Copper Creek and Fenton zones	298 000 000	0.261	–	–	–	007e	0.514e	0.141	Planned to drill the high-grade zone in early 1996.
Polaris Taku mine Canarc Resources Corp.	Drill indicated	3 266 000	–	–	–	–	–	–	14.	In production 1937-51. The capital cost of a 1100-t/d operation, producing 145 000 oz of gold per year over a period of ten years, was estimated, in March 1996, at US$62 million. Underground program in progress as at November 1996.
Porcher Island mine Porcher Island Gold Corporation Cathedral Gold Corporation	Indicated and inferred	1 390 000	–	–	–	–	–	–	7.	In production during 1930s. Drilling as at December 1996.
Prosperity (Fish Lake) Taseko Mines Limited	Mineable	675 000 000	0.236	–	–	–	–	..	0.434	Kilborn Engineering Pacific Ltd. prepared, in July 1994, a pre-feasibility study for a 60 000-t/d open-pit operation with an estimated capital cost of US$460 million. Planned, in August 1996, a $12 million drilling program as well as project engineering for a 90 000-t/d operation, environmental studies and socio-economic studies.

TABLE 1 (cont'd)

Deposits and Companies	Tonnage and Grade Description	Tonnage[1]	Grade[2]							Comments
			Cu	Ni	Pb	Zn	Mo	Ag	Au	
		(tonnes)	(%)	(%)	(%)	(%)	(%)	(g/t)	(g/t)	
BRITISH COLUMBIA (cont'd)										
Rainbow No. 2 Main zone Teck Corporation Getchell Resources Inc.	Potential	14 100 000	0.5	–	–	–	..	..	..	Proximal to Teck's Afton mine. Drilling as at April 1996.
Red Chris - Red Chris American Bullion Minerals Ltd. Teck Corporation	Measured and indicated	190 900 000	0.52	–	–	–	–	–	0.47	Pre-feasibility study prepared, in May 1996, by Fluor Daniel Wright Engineers Limited estimated the capital cost of a 90 000-t/d open-pit operation at $541 million. Seeking buyer as at August 1996.
Red Mountain - Marc and AV zones Royal Oak Mines Inc.	Indicated and inferred geological resource	2 500 000	–	–	–	–	–	38.1	12.8	Application for mine development certificate submitted in May 1993. Updated feasibility study expected in late 1996 for production in 1999 at 150 000 oz of gold per year. Capital cost estimated at $100 million. Drilling as at August 1996.
Similco mine - Alabama Princeton Mining Corporation	Preliminary geological	26 000 000	0.352	–	–	–	–	–	0.2	Proximal to Similkameen concentrator. Planned additional drilling during 1996.
Siwash Fairfield Minerals Ltd.	Indicated and inferred	122 000	–	–	–	–	–	–	25.	Recalculating resource estimate as at November 1996.
Taurus mine International Taurus Resources Inc. Cusac Gold Mines Ltd.	Geological resource	118 000 000	–	–	–	–	–	–	0.99	In production 1981-86. Resource in a potential starter pit is estimated at 45.4 Mt grading 1.05 g/t gold. Reported new drilling results in October 1996.
Tulsequah Chief mine Redfern Resources Ltd.	Mineable	7 150 000	1.24	–	1.18	8.32	–	99.33	2.41	Last produced during the 1950s. Feasibility study prepared by Rescan Engineering Ltd. estimated the capital cost of a 2500-t/d underground operation at $172 million. Concentrates would be shipped to Skagway, Alaska. The adjacent Big Bull mine contains a resource of 700 000 t. Planned, in early 1996, to file a Project Report under the B.C. *Environmental Assessment Act*.
Vine Consolidated Ramrod Gold Corporation	Proven, probable and possible	1 360 000	–	–	4.65e	2.39e	–	51.8e	1.8e	Drilling as at April 1996.
YUKON TERRITORY										
Canalask Cachet Entreprises Corp. Expatriate Resources Ltd.	–	398 235	–	1.35	–	–	–	–	–	Drilled in late 1994. Planned, as at May 1996, airborne, magnetic and electromagnetic surveys.
Casino (oxide and sulphide) Pacific Sentinel Gold Corp.	Mineable - open pit	178 200 000	0.303	–	–	–	0.028	–	0.376	Metallurgical test results for the hypogene and supergene zones reported in fall of 1995. Planned, as at June 1996, to investigate power, transportation and other government incentive programs.
Dublin Gulch First Dynasty Mines Ltd.	Mineable and inferred - open pit	36 000 000	–	–	–	–	–	–	0.91	Planned, in March 1996, to prepare a feasibility study by fall of 1996 for a 5-Mt/y open-pit heap-leach operation.
Elsa - Bellekeno mine United Keno Hill Mines Limited	Measured, indicated and inferred resource	255 377	–	10.87	7.86	–	–	1 196.	0.2	Resource estimate increased during 1995. Production feasibility study completed during summer of 1996. Rehabilitation and development program in progress.
Elsa - Silver King mine United Keno Hill Mines Limited	Measured, indicated and inferred resource	72 134	–	3.27	0.61	–	–	1 165.	0.3	Production feasibility study completed during summer of 1996. Rehabilitation and development program in progress.

Goddell Omni Resources Inc.	Drill indicated	207 091	–	–	–	–	–	–	9.94	A $400 000 underground drilling program under way as at December 1996.
Grew Creek (oxide) YGC Resources Ltd.	–	173 000	–	–	–	–	–	. .	12.	Start-up costs were estimated in 1994 at $5 million. Recalculating resource as at June 1996. Potential feed for Ketza River concentrator.
Grizzly (Dy) - underground Anvil Range Mining Corporation	Probable	9 300 000	–	–	5.50	6.62	–	80.3	0.82	Examining, as at August 1996, alternative mining methods. Production expected in 2001 at a capital cost of $40 million.
Ketza River mine YGC Resources Ltd.	Proven, probable and possible	191 000	–	– –	–	–	–	. .	11.	Discovered Forks oxide zone in summer of 1995. Drilling as at June 1996.
Kudz Ze Kayeh Cominco Ltd.	Possible resource	13 000 000	0.9	–	1.5	5.9	–	133.	1.3	Discovered in 1994. Work carried out in 1995 included drilling of in-fill holes to provide orebody definition, ore reserve estimation, metallurgical sampling and testing, open-pit mine design, preliminary metallurgical flow-sheet design, environmental studies, geotechnical testing for foundations and tailings dam location, power studies, engineering studies, cost estimation, concentrate transportation and marketing analyses, socio-economic studies and preliminary economic evaluations. Planned to submit an Initial Environmental Evaluation Report in early 1996.
La Forma mine (Mount Freegold) Redell Mining Corp.	–	450 000e	–	–	–	–	–	–	11.e	Announced, in July 1996, that a letter of intent had been signed with B.Y.G. Natural Resources for custom mining and milling at B.Y.G.'s Mt. Nansen concentrator.
Merg NDU Resources Ltd. Cameco Corporation	Drill indicated	5 527 002	1.76	–	2.46	4.60	–	62.7	1.0	Increased estimate of resource in January 1997.
Mel International Barytek Resources Ltd. Breakwater Resources Ltd.	Drill indicated	6 778 000	–	–	2.03	7.10	–	–	–	Increased estimate of mineral inventory during 1994. Drilled 1134 m during 1995. The deposit also grades 54.69% **barite**.
Minto ASARCO Incorporated Minto Explorations Ltd.	Proven and probable	6 550 000	1.873	–	–	–	–	8.2	0.51	Capital cost of a 1300-t/d open-pit operation estimated at $29.8 million. Production is expected to start in 1998.
Skukum Creek Omni Resources Inc.	Drill indicated	465 000	–	–	–	–	–	275.	7.5	Planned, as at November 1996, to recalculate resource estimate.
Williams Creek Western Copper Holdings Limited	Diluted oxide reserve	14 110 000	1.01	–	–	–	–	–	0.51	Feasibility study, prepared in 1994, by Kilborn Engineering Pacific Ltd. estimated the capital cost of a 5800-t/d heap leach SX-EW open-pit operation producing 30 million lb of copper annually at $63 million. Engineering study in progress as at April 1996. Production could start in 1997.
Wolverine Westmin Resources Limited Aina Resources Ltd.	Geological resource	5 300 000	1.41	–	1.53	12.96	–	359.1	1.81	Massive sulphide discovered in 1995. Reported, in September 1996, finding new Lynx zone. Reported increase in resource estimate in November 1996.
NORTHWEST TERRITORIES										
Creasaurum mine Tremlnco Resources Ltd. Royal Oak Mines Inc.	Drill indicated	290 000	–	–	–	–	–	–	7.5	In production 1949-69. Planned, as at September 1994, to bring deposit into production and process ore at Ptarmigan concentrator.
Damotl Lake (McPherson project) Quest International Resources Corporation	Drill-indicated resource	1 700 000e	–	–	–	–	–	. .	11	Ten gold-bearing zones have been discovered. A US$2.5 million underground program in progress as at October 1996.
Discovery mine - Ormsby zone GMD Resources Corp.	Proven, probable and possible	2 298 000	–	–	–	–	–	–	21	In production 1949-69. Reported new drilling results in December 1996. An additional program is planned for the summer of 1997.

TABLE 1 (cont'd)

Deposits and Companies	Tonnage and Grade Description	Tonnage[1]	Grade[2] Cu	Ni	Pb	Zn	Mo	Ag	Au	Comments
		(tonnes)	(%)	(%)	(%)	(%)	(%)	(g/t)	(g/t)	
NORTHWEST TERRITORIES (cont'd)										
Epworth (Esker) Noranda Mining and Exploration Inc. Rhonda Mining Corporation	Geological resource	100 000 000	..	–	..	..	–	..	–	Logging core as at October 1996.
Heninga Lake Inco Limited Breakwater Resources Ltd.	Drill-indicated resource	5 720 000	0.5	–	–	7.9	–	101.	0.92	Optioned to Inco in early 1995. Reported increase in resource estimate in July 1996. Evaluating, as at November 1996, results of latest program.
Izok Lake (including Inukshuk) Inmet Mining Corporation	Probable mineable open-pit and underground	16 500 000	2.2	–	1.1	11.4	–	60.	0.1e	Pre-feasibility study prepared in early 1993 estimated the capital cost of a 3000-t/d operation at $350 million. Carrying value of property written down from $101 million to $25 million in October 1996.
Kim-Case Royal Oak Mines Inc.	–	3 357 000	–	–	–	–	–	–	2.7	Optioned to Royal Oak in 1994. Planned a drilling and geophysical program during 1996. Proximal to Colomac concentrator.
Meadowbank - Goose Island Cumberland Resources Ltd. Comaplex Resources International Ltd.	–	976 834	–	–	–	–	–	–	11.46	Drilled during 1996.
Meadowbank - North Portage Cumberland Resources Ltd. Complex Resources International Ltd.	–	259 185	–	–	–	–	–	–	9.31	Reported discovery of deposit in October 1996.
Meadowbank - Portage Cumberland Resources Ltd. Comaplex Resources International Ltd.	Probable and possible resource	4 700 000	–	–	–	–	–	–	4.4	Reported, in early 1996, a large increase in resource estimate.
Melladine East - Discovery, Capricorne and Pisces Cumberland Resources Ltd. Comaplex Resources International Ltd.	Inventory	2 000 000	–	–	–	–	–	–	6.72	Two new zones reported in October 1995. Drilling as at June 1996.
Nicholas Lake - main showing Royal Oak Mines Inc.	Mineable	308 000	–	–	–	–	–	–	15.	Results of 1990 pre-feasibility study estimated the capital cost of a 350-t/d operation at $18 million. Planned, in early 1996, to initiate environmental baseline studies.
Prairie Creek mine San Andreas Resources Corporation Titan Pacific Resources Ltd.	Geological resource	10 600 000	0.4e	–	11.3	13.1	–	188.	–	Resource estimate increased in November 1995. Reported, in December 1996, signing of a development agreement with the Nahanni Butte Dene Band. A 170-km all-weather road would be required to bring the deposit into production.
Southwin (Cache) Noble Peak Resources Ltd.	Possible	363 000	–	–	–	–	–	–	9.3	Resource estimate doubled during 1994. Seeking, as at May 1996, a joint-venture partner.
Sue-Dianne Fortune Minerals Ltd. Noranda Mining and Exploration Inc.	Resource	8 000 000	0.8	–	–	–	–	..	–	Planned, in March 1996, to conduct geological mapping, ground geophysics and drilling.
Try Me Treminco Resources Ltd. Gordon Lake Gold Mines Ltd.	Probable and possible	90 000	–	–	–	–	–	–	14.	Planned, as at June 1996, to assess possibility of test mining 4000-6000 t during winter of 1996-97.
Turquetil Midasco Gold Corp.	–	3 400 000	–	–	–	–	–	–	2.	Drilled during 1996. Discovered a new zone of mineralization.

Source: Natural Resources Canada, January 31, 1997.
– Nil or unknown; . . Not available.
e Author's estimate. k Combined lead and zinc grade.
1 One tonne = 1.1023113 short tons. 2 One gram per tonne (g/t) = 0.02916668 troy ounces per short ton. 3 The Aquarius deposit was committed to production in mid-January 1997.
Note: These resources are not counted in Canadian reserves.